



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,916	09/04/2003	Mihai Buretea	40-000810US	9096
22798	7590	10/31/2005	EXAMINER	
QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C. P O BOX 458 ALAMEDA, CA 94501			WONG, ERIC K	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/656,916	Applicant(s) BURETEA ET AL.	
	Examiner Eric Wong	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 69-104, 106-183 and 199 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 116-122 is/are allowed.
- 6) ☒ Claim(s) 69-104, 106-115, 123-183 and 199 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0805</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 8/8/05 have been fully considered but they are not persuasive.

With respect to the arguments against Talroze et al., Applicants argue that the prior art fails to disclose a composite material. Examiner respectfully disagrees. The nonowires of Talroze et al. are used as a part of a nanowire structure. Such a structure would contain one or more different materials, thus forming a composite. The current claims do not structurally define the composite structure. Furthermore, the recitation of a composite material has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, USPQ 478 (CCPA 1951).

With respect to the arguments in view of Mujumdar, Applicants argue that the prior art fails to explicitly disclose a composite material including core-shell nanostructures in which the core and shell have a specific type-I or type-II band offset. Examiner respectfully disagrees. As currently claimed, only one or more of the nanostructures are required to be made with the specific bands. There is no limitation that specifically requires the core and/or shell to have a specific band type. Examiner believes the prior art meets the limitations as currently claimed.

The argument with respect to claim 116 is persuasive.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 69-79, 96, 102, 131, 132, and 135 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Number 6,563,132 to Talroze et al.

As to claims 69, 96, 102, 131, 132 and 135, Talroze discloses in column 4, lines 6-24, a composite material comprising:

- A plurality of nanowires;
- A small molecule or molecular matrix or a matrix comprising at least one polymer (conductive polymer materials are disclosed), which small molecule or molecular matrix or components thereof are used to orient the nanowires.

As to claim 70, a composite material comprising one or more nanostructures and a polymeric matrix comprising a polysiloxane is disclosed (column 4, line 66).

As to claim 71, polydimethylsiloxane is commonly used in the art (disclosed in background of invention).

As to claim 72, superconducting nanowires in copolymerized polymers are disclosed.

As to claim 73, nanowires are disclosed.

As to claim 74, sodium metal dopants are disclosed.

As to claim 75, Table 1 appears to disclose various materials that are used for the nanostructures.

As to claim 76, low weight solvent materials are disclosed.

As to claim 77, the composition is shaped.

As to claim 78, the structure can be used in devices such as diodes (column 4).

As to claim 79, the polymer includes organic ions.

4. Claims 108, and 122 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Application Publication 2002/0172820 to Majumdar et al.

- Majumdar et al. discloses a composite material comprising one or more nanostructures with a conduction and valence band (Paragraph 222); and
- A matrix comprising a second material comprising with a Type I band offset (paragraph 121 discloses conduction band offsets).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 80-95, 97-101, 103-104, 106-107, 109-115, 123-130, 133-134, 136-183 and 199 are rejected under 35 U.S.C. 103(a) as being unpatentable over Talroze.

Talroze discloses a nanowire structure organized in a matrix with electron holes and the ability to change the structure by opto-electronic means, however, Talroze fails to disclose the specific compositions and materials as claimed.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the materials and compositions as claimed, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. It is respectfully noted that it appears Applicant has not disclosed any criticality in the specific material options or compositions in Applicant's specification. Talroze does not limit the types of materials or compositions to be used. By merely selecting one material or composition over another is a general chemical engineering practice to provide optimum operability for the apparatus's intended use. Examiner's contention of this obvious choice in design can be overcome if Applicant establishes unexpected results by arranging the substrate in the location as claimed.

7. Claims 109-115, and 123-130 are rejected under 35 U.S.C. 103(a) as being unpatentable over Majumdar et al. as applied to claim 108 above.

Majumdar et al. discloses a nanowire structure organized in a matrix with conduction and valence bands, however, Majumdar et al. fails to disclose the specific compositions and materials as claimed.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the materials and compositions as claimed, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. It is respectfully noted that it appears Applicant has not disclosed any criticality in the specific material options or compositions in Applicant's specification. Majumdar et al. does not

Art Unit: 2883

limit the types of materials or compositions to be used. By merely selecting one material or composition over another is a general chemical engineering practice to provide optimum operability for the apparatus's intended use. Examiner's contention of this obvious choice in design can be overcome if Applicant establishes unexpected results by arranging the substrate in the location as claimed.

Allowable Subject Matter

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art made of record fails to explicitly disclose or reasonably suggest a matrix and one or more nanowires comprising a core and at least one shell where the shell comprises a second semiconducting material having a conduction and valence band and where the materials have a Type-II band offset. Therefore claim 116 is allowed. Claims 117-122 are allowed by virtue of dependency.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 08/08/2005 have been considered by the examiner and made of record (note the attached copy of form PTO-1449).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 2883

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Wong whose telephone number is 571-272-2363. The examiner can normally be reached on Monday through Friday, 830AM - 430PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



EW



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800